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# SERVICE QUALITY IN INDIAN TELECOM SECTOR - A REGRESSION MODEL STUDY

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## Introduction

In India, as in many developing countries, low tele- density resulted in great emphasis being laid on rapid expansion often at the cost of quality of service. One of the benefits expected from the private sector's entry into telecom is an improvement in the quality of service to international standards. Quality of service was identified as an important reform agenda and TRAI has advised QOS (Quality of Service) norms that are applicable across the board to all operators (Singh et. al. 1999).

In services marketing literature, service quality has been concisely defined as the overall assessment of a service by the customers. Service quality is playing an increasingly important role in the present environment where there is no further scope for the companies to differentiate themselves other than the quality of the service provided by them. Delivering superior service quality than the competitors is the key for the success of any organization. But, the companies face difficulties in measuring the quality of services offered to the customers.

In order to attract new customers and to retain the existing customers, mobile telecommunication service providers in Indian market are employing a variety of ways such as providing customers with excellent services, modern looking equipments, courteous, skilful, well trained personnel, and supportive operative systems. Service providers expect that with excellent service, customers will be satisfied and if satisfied, they will become loyal customers for the organization.

The significant growth of service providers in the field of mobile telecommunication sector has caused the appearance of buyer's market. Buyer's market is that type of market, where supply exceeds demand. In this situation of buyer's market, the customers get more bargaining power. Therefore in this situation, the service providers have to be very effective and efficient in their operations because customers now have choices in determining the service provider they want. In the context of customers, the need for excellent services always keeps on changing. With the passage of time, the level of service quality also varies.

The Indian mobile telecommunication services operators are facing a number of significant challenges, because of changing dynamics:

- First, retaining existing customers mainly in a pre-paid and high churn market has become more difficult and costly.
- Second, new customer acquisition is becoming more elusive than ever as potential customers have more options to choose from and mobile phone operators offer attractive deals to lure prospect customers.

➤ Third, as mobile phone operators have had to incur additional cost in keeping existing customers and acquiring new ones, their Average Revenue Per User (ARPU) has declined, leading to worsening of their financial performance.

In light of above mentioned challenges, mobile telecommunication services providers need to make customer satisfaction a strategic priority. Moreover, satisfied customers have a higher propensity to stay with their existing service provider than the less satisfied ones (Cronin et al., 2000) and are more likely to recommend the service provider to others, leading to improved bottom line for the company. Thus, it is very important that Indian mobile telecommunication services operators gain a better understanding of the relationship between the performance of service quality attributes, customer value, satisfaction, and loyalty.

### **Service Quality of Mobile Phone Service Providers**

Nowadays cellular mobile is an essential product for our daily communication. Customers mainly purchase this product for instant communication and various services provided by the companies (Paulrajan Rajkumar & Harish R, 2011). Services mainly depend on some factors and customers always try to buy the product which has many factors or attributes fulfilling their desire. Recently the concept of customer satisfaction has received much attention (Hafeez S & Hasnu S, 2010). In cellular mobile market customers have higher expectations for communication from its service providers (Gremier DD & Brown SW, 1996).

Numerous studies have investigated the perspective of mobile phone users with regard to the quality aspects. These have been discussed in succeeding paragraphs. These studies provide insight to the quality dimensions that mobile phone operators need to consider remaining competitive in changing environment (MA Khan, 2010).

In 2008, Telecom Regulatory Authority India carried out quality of service survey of mobile operators based on users' satisfaction. The sample consisted of 1318 mobile phone users. The important dimensions of regulatory services benchmark dimensions of service quality included billing, customer care, availability of network, value-added services and pre-sales and sales dimensions. Out of 11 operators, only five operators achieved the 90% service quality benchmark (Survey, 2008).

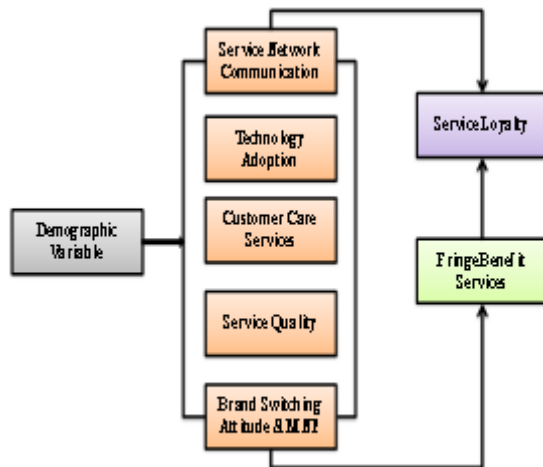
A study by Sukumar (2007), using a sample of 104 mobile phone subscribers, measured the mobile phone users' preferences for selection of an operator. The result of the study found important dimensions as brand image, customer care, services availability, credit facility for connection, deposit amount, and prices in that order of priority.

Service organizations are continually looking for ways to increase customer loyalty (Anantha Raj AA & Abdullah AG, 2013). Although loyalty to tangible goods (i.e., brand loyalty) has been studied extensively by marketing scholars, relatively little theoretical or empirical research has examined loyalty to service organizations i.e., service loyalty (Auka DO, 2012). This study extends previous loyalty research by examining service loyalty and factors expected to influence its development. In particular, a literature review is combined with analysis of qualitative data from over forty depth interviews to develop a model of service loyalty that includes three antecedents - satisfaction, switching costs, and interpersonal bonds (DD. Gremiera and SW Brown, 1996).

## Proposed Conceptualized Research Model

There are 7 dimensions were framed for this study. Those are; i) Service Network Communication, ii) Technology Adoption, iii) Customer Care Services, iv) Service Quality, v) Brand Switching Attitude & MNP, vi) Fringe Benefit Services, and vii) Service Loyalty. Here Demographic variables, Service Network Communication, Technology Adoption, Customer Care Services, Service Quality, Brand Switching Attitude & MNP, are independent variables and Fringe Benefit Services and Service loyalty are the dependent variable. It is studied that how and what extent the independent variables make changes in the dependent variable. The proposed conceptual research model shows the process of research as follows:

### *Conceptual Model for studying Service loyalty in Mobile Service Providers*



## Construct Measures and Data Collection

Data were collected by means of a structured questionnaire comprising nine dimensions namely (1) *Service Network Communication (SNC 05 items)*, (2) *Technology Adoption (TA 09 items)*, (3) *Customer Care Services (CCS 11 items)*, (4) *Fringe Benefit Services (FBS 07 items)* (5) *Service Quality (SQ 05 items)*, (6) *Brand Switching Attitude & MNP (BSA 09 items)* and (7) *Service Loyalty (SL 04 items)*. 11 items were used to sketch the respondents' demographic profile. All the dimensions were presented as statements on the questionnaire, with the same seven point, Likert scale (varied from 1 highly dissatisfied to 7 highly satisfied and Strongly Disagree to Strongly Agree). For conducting an empirical study, data were collected from respondents in various Districts of Tamil Nadu. Assurance was given to the respondents that the information collected from them will be kept confidential and will be used only for academic research purposes. Data had been collected using the "Personal-Contact" approach as suggested by Suresh chandar et al. (2002) whereby "Contact Persons" (Patients) have been approached personally and the survey was explained in detail. The final questionnaire together with a cover letter handed over personally to the "Contact Persons", who in turn distributed it randomly to customers among the Mobile Service Provider's.

A total of 750 nos. of questionnaire were circulated among respondents of districts selected by stratified random sampling method and a total of 714 valid questionnaires were used for the analysis (response rate of 95.2 %).

### The Demographic Profile

S. No.	Demographic Dimensions		No. of Respondents	% of Respondents
1)	Sex	Male	472	62.50
		Female	278	37.50
		<b>Total</b>	<b>750</b>	<b>100</b>
2)	Age	18.yrs. to 27 yrs.	156	20.80
		28.yrsss. to 37 yrs.	216	28.80
		38 yrs. to 48 yrs.	181	24.14
		48 yrs. to 57 yrs.	102	13.60
		58.yrs. to 67 yrs.	76	10.13
		68 yrs and above.	19	02.53
		<b>Total</b>	<b>750</b>	<b>100</b>
3)	Religion	Hindu	678	90.40
		Muslim	27	03.60
		Christian	45	06.00
		<b>Total</b>	<b>750</b>	<b>100</b>
4)	Community	BC	202	26.93
		MBC	85	11.33
		SC	463	61.74
		<b>Total</b>	<b>750</b>	<b>100</b>
5)	Educational Qualifications	School Dropout	76	10.13
		SSLC	124	16.53
		HSC	80	10.67
		Diploma	112	14.94
		UG	177	23.60
		PG	181	24.13
		<b>Total</b>	<b>750</b>	<b>100</b>
6)	Occupation	Unemployed	124	16.53
		Farmer	80	10.67
		Private Employee	177	23.60
		Government Employee	112	14.94
		Business	76	10.13
		Professional	80	10.67
		<b>Total</b>	<b>750</b>	<b>100</b>
7)	Annual Income in (Rupees)	Below 50000	173	23.00
		50000- 150000	186	24.80
		150001 – 250000	192	25.60
		250001- 350000	147	19.60
		Above 350000	53	7.00

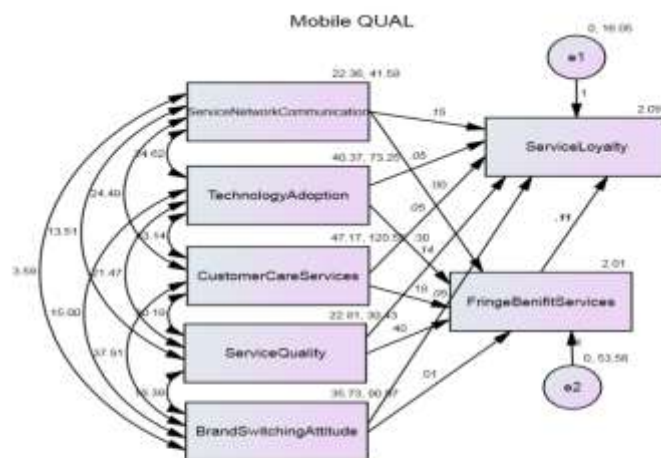
		<b>Total</b>	<b>750</b>	<b>100</b>
8)	Service Provider	BSNL	112	14.93
		Airtel	161	21.47
		Aircel	137	18.27
		Reliance	80	10.67
		MTS	67	8.93
		Vodafone	114	15.20
		Idea	43	5.73
		Tata Docomo	36	4.80
		<b>Total</b>	<b>750</b>	<b>100</b>
9)	Type of service	Post Paid	273	36.40
		Pre Paid	387	51.60
		CDMA	56	7.47
		GSM	34	4.53
		<b>Total</b>	<b>750</b>	<b>100</b>

Source: Primary Data

### Regression Model of the “Mobile QUAL” Mediated Structural Model

In hierarchical regression, the predictor variables are entered in sets of variables according to a pre-determined order that may infer some causal or potentially mediating relationships between the predictors and the dependent variable (Francis, 2003). Such situations are frequently of interest in the social sciences. The logic involved in hypothesizing mediating relationships is that “The Independent Variable Influences the Mediator which, In Turn, Influences the Outcome” (Holmbeck, 1997). However, an important pre-condition for examining mediated relationships is that the independent variable is significantly associated with the dependent variable prior to testing any model for mediating variables (Holmbeck, 1997). Of interest is the extent to which the introduction of the hypothesized mediating variable reduces the magnitude of any direct influence of the independent variable on the dependent variable. Hence the researcher empirically tested the hierarchical regression for the model conceptualized in the figure 4.19 within the AMOS 20.0 graphics environment.

*Shows the AMOS Output with Regression Weights of “Mobile QUAL” Mediated Model*



The Regression analyses conducted, the parameter estimates are then viewed within AMOS graphics and it displays the standardized parameter estimates. The regression analysis revealed that the Fringe Benefit Services on the various dimensions of Mediated Model Mobile Service Provider, Fringe Benefit Services (FBS) influenced 0.11 of the Service Loyalty (SL), followed by Service Quality (SQ) which explains 0.40 of the Fringe Benefit Services (FBS) the  $R^2$  value of 0.11 is displayed above the box Service Loyalty (SL) in the AMOS graphics output. The visual representation of results suggest that the relationships between the dimensions of Mobile Service Provider, procedure and formalities (Service Quality (SQ) => Fringe Benefit Services (FBS) = 0.40) resulted significant impact on the mediated factor Fringe Benefit Services (FBS). Service Network Communication (SNC), Technology Adoption (TA), Customer Care Services (CCS), Service Quality (SQ), and Brand Switching Attitude & MNP (BSA) are resulted very limited influence on the Fringe Benefit Services (FBS). It shows that the Customer perception towards the Technology Adoption (TA) and Customer Care Services (CCS) towards outcome of Mobile Service Provider is insignificant whereas the impact of the same is very high on mediating variable.

#### **Bayesian Estimation and Testing for Regression Model of “Mobile QUAL” Mediated Structural Equation Model**

The research model is a SEM, while many management scientist are most familiar with the estimation of these models using software that analyses covariance matrix of the observed data (e.g. LISREL, AMOS, EQS), the researcher adopted a Bayesian approach for estimation and inference in AMOS 20.0 environment (Senthilkumar. N and Arulraj. A, 2011; Arbuckle and Wothke, 2006) since, it offers numerous methodological and substantive advantages over alternative approaches.

### Bayesian Convergence Distribution for “Mobile QUAL” Regression Model

Regression weights									
	Mean	S.E.	S.D.	C.S.	Skewness	Kurtosis	Min	Max	Name
<b>FBS&lt;- -SNC</b>	0.004	0.001	0.05	1.000	0.025	0.03	-0.187	0.212	W1
<b>FBS&lt;- -TA</b>	0.296	0.001	0.039	1.000	-0.023	0.109	0.14	0.441	W2
<b>FBS&lt;- -CCS</b>	0.184	0.001	0.033	1.000	-0.042	0.047	0.029	0.303	W3
<b>FBS&lt;- -SQ</b>	0.402	0.001	0.065	1.000	0.034	0.068	0.15	0.659	W4
<b>FBS&lt;- -BSA</b>	0.013	0.001	0.032	1.000	-0.047	-0.06	-0.113	0.146	W5
<b>SL&lt;-- BSA</b>	0.051	0	0.017	1.000	-0.027	0.046	-0.021	0.12	W6
<b>SL&lt;-- SQ</b>	0.141	0.001	0.036	1.000	-0.049	0.074	-0.002	0.269	W7
<b>SL&lt;-- CCS</b>	0.054	0	0.018	1.000	0.021	0.004	-0.019	0.125	W8
<b>SL&lt;-- TA</b>	0.048	0.001	0.023	1.000	0.023	0.03	-0.048	0.135	W9
<b>SL&lt;-- SNC</b>	0.149	0.001	0.027	1.000	-0.017	0.031	0.039	0.281	W10
<b>SL&lt;-- FBS</b>	0.105	0	0.021	1.000	0.009	0.102	0.016	0.19	W11
Means									
	Mean	S.E.	S.D.	C.S.	Skewness	Kurtosis	Min	Max	Name
<b>SNC</b>	22.365	0.007	0.251	1.000	0.052	0.059	21.378	23.432	M1
<b>TA</b>	40.37	0.006	0.33	1.000	0.016	0.044	39.079	41.765	M2
<b>CCS</b>	47.16	0.01	0.415	1.000	-0.065	-0.124	45.275	48.652	M3
<b>SQ</b>	22.809	0.006	0.212	1.000	-0.009	-0.005	22.018	23.665	M4
<b>BSA</b>	35.74	0.01	0.36	1.000	0.01	-0.024	34.14	37.015	M5
Intercepts									
	Mean	S.E.	S.D.	C.S.	Skewness	Kurtosis	Min	Max	Name
<b>FBS</b>	1.995	0.048	1.637	1.000	0.021	0.056	-4.181	8.688	I1
<b>SL</b>	2.099	0.021	0.913	1.000	-0.027	0.013	-1.724	5.568	I2
Covariances									
	Mean	S.E.	S.D.	C.S.	Skewness	Kurtosis	Min	Max	Name
<b>SNC&lt;- &gt;BSA</b>	3.724	0.048	2.348	1.000	0.045	0.055	-5.384	14.736	C1
<b>BSA&lt;- &gt;TA</b>	15.286	0.079	3.194	1.000	0.048	0.038	1.597	27.671	C2

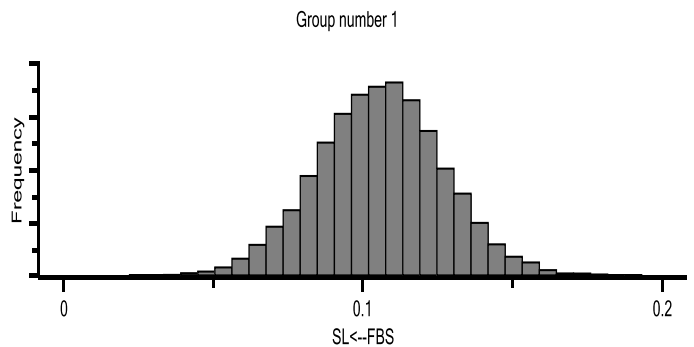


<b>BSA&lt;-&gt;CCS</b>	38.5	0.112	4.212	1.000	0.148	0.129	22.726	57.56	C3
<b>BSA&lt;-&gt;SQ</b>	18.731	0.047	2.154	1.000	0.095	0.01	9.935	28.336	C4
<b>SNC&lt;-&gt;SQ</b>	13.807	0.033	1.452	1.000	0.165	-0.047	8.396	19.898	C5
<b>TA&lt;-&gt;SQ</b>	21.865	0.067	2.04	1.001	0.123	-0.098	14.578	29.848	C6
<b>CCS&lt;-&gt;SQ</b>	30.662	0.067	2.627	1.000	0.225	0.188	20.732	43.424	C7
<b>SNC&lt;-&gt;CCS</b>	24.947	0.069	2.926	1.000	0.193	0.012	14.512	38.295	C8
<b>TA&lt;-&gt;CCS</b>	43.823	0.127	3.994	1.001	0.261	0.322	30.795	67.788	C9
<b>SNC&lt;-&gt;TA</b>	25.102	0.06	2.327	1.000	0.163	0.07	16.372	35.334	C10
<b>Variances</b>									
	<b>Mean</b>	<b>S.E.</b>	<b>S.D.</b>	<b>C.S.</b>	<b>Skewness</b>	<b>Kurtosis</b>	<b>Min</b>	<b>Max</b>	<b>Name</b>
<b>SNC</b>	42.433	0.055	2.232	1.000	0.232	0.111	35.077	52.231	V1
<b>BSA</b>	92.477	0.097	4.852	1.000	0.181	-0.076	75.772	115.103	V2
<b>TA</b>	74.473	0.128	4.01	1.001	0.225	0.134	60.545	91.118	V3
<b>CCS</b>	122.585	0.198	6.57	1.000	0.26	0.209	96.428	156.995	V4
<b>SQ</b>	31.028	0.05	1.689	1.000	0.177	-0.015	24.849	38.61	V5
<b>e2</b>	54.348	0.102	2.872	1.001	0.19	0.011	44.56	65.208	V6
<b>e1</b>	16.322	0.02	0.874	1.000	0.232	0.098	13.363	19.905	V7

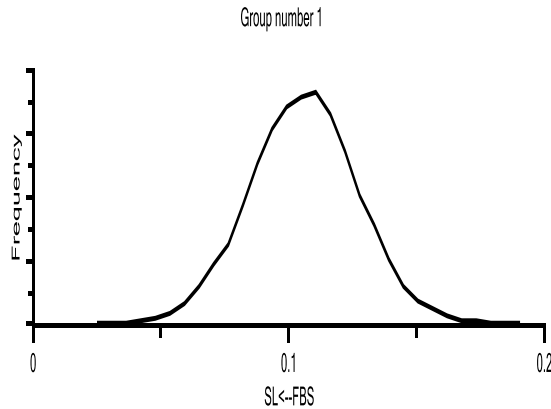
Source: Amos 18 output

### Posterior Diagnostic Plots of 'Mobile QUAL' Mediated Regression Model

To check the convergence of the Bayesian MCMC method the posterior diagnostic plots are analysed. The following figure shows the posterior frequency polygon of the distribution of the parameters across the 99000 samples. The Bayesian MCMC diagnostic plots reveals that for all the figures the normality is achieved, so the structural equation model fit is accurately estimated.



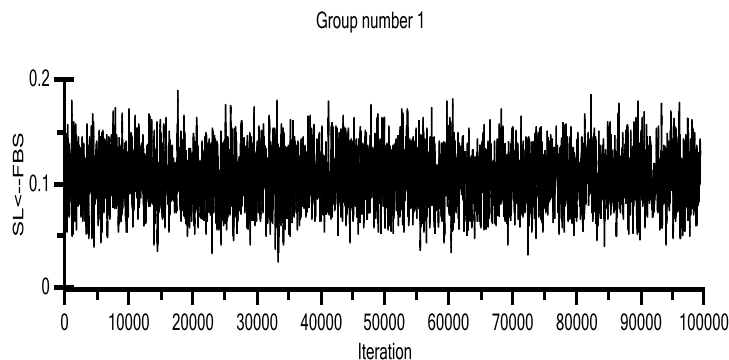
***Posterior frequency polygon distribution of the Mediating Factor Service Loyalty (SL) and Fringe Benefit Services (FBS) regression weight (W11)***



***Posterior frequency histogram distribution of the Mediating Factor Service Loyalty (SL) and Fringe Benefit Services (FBS) regression weight (W11)***

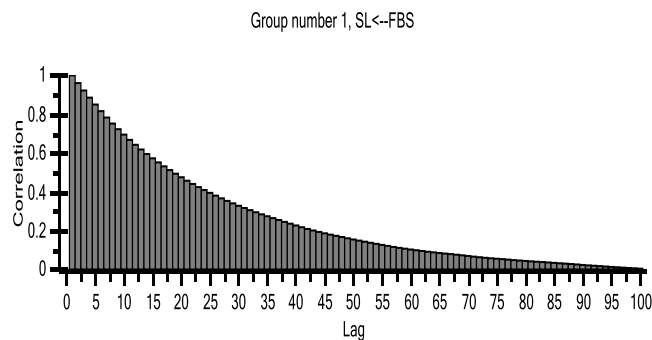
The trace plot also called as time-series plot shows the sampled values of a parameter over time. This plot helps to judge how quickly the MCMC procedure converges in distribution. The following figures show the trace plot of the mediated Mobile QUAL Model for the mediated factor Fringe Benefit Services (FBS) to Service Loyalty (SL) dimension across 99000 samples. If we mentally break up this plot into a few horizontal sections, the trace within any section would not look much different from the trace in any other section. This indicates that the convergence in distribution takes place rapidly. Hence the mediated Mobile QUAL MCMC procedure very quickly forgets its starting values.

***Posterior frequency trace plot of the Mediating Factor Service Loyalty (SL) and Fringe Benefit Services (FBS) regression weight (W11)***



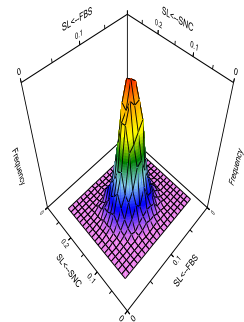
To determine how long it takes for the correlations among the samples to die down, autocorrelation plot which is the estimated correlation between the sampled value at any iteration and the sampled value  $k$  iterations later for  $k = 1, 2, 3, \dots$  is analysed for the Mobile QUAL regression model. The figure 4.23 shows the correlation plot of the Mobile QUAL model for the mediated factor Fringe Benefit Services (FBS) to Service Loyalty (SL) dimension across 99000 samples. The figure exhibits that at lag 100 and beyond, the correlation is effectively 0. This indicates that by 90 iterations, the MCMC procedure has essentially forgotten its starting position. Forgetting the starting position is equivalent to convergence in distribution. Hence it is ensured that convergence in distribution was attained and that the analysed samples are indeed samples from the true posterior distribution.

***Posterior frequency autocorrelation plot of the Mediating Factor Service Loyalty (SL) and Fringe Benefit Services (FBS) regression weight (W11)***

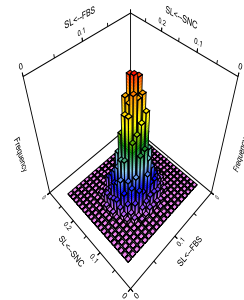


Even though marginal posterior distributions are very important, they do not reveal relationships that may exist among the two parameters. The summary table and the frequency polygons describe only the marginal posterior distributions of the parameters. Hence to visualize the relationships among pairs of Parameters in two-dimensional. The surface plots in the following figures provides vicariate marginal posterior plots of the Mobile QUAL model for the mediated factor Fringe Benefit Services (FBS) with other dimensions across 99000 samples. From the two figures it is revealed that the two dimensional surface plots also signifies the interrelationship between the mediating variable Fringe Benefit Services (FBS) with the other dimensions Service Loyalty (SL) and Service Network Communication (SNC).

**Two-dimensional surface plot of the marginal posterior distribution of the mediating factor Fringe Benefit Services (FBS) with SQ and SNC**

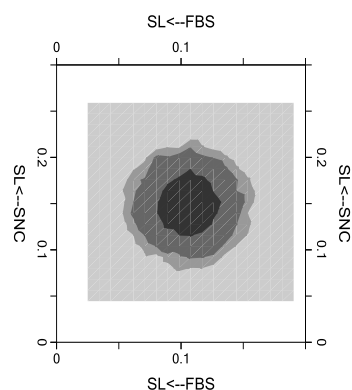


**Two-dimensional histogram plot of the marginal posterior distribution of the mediating factor Fringe Benefit Services (FBS) with SQ and SNC**



The following figure displays the two-dimensional plot of the bivariate posterior density across 99000 samples. Ranging from dark to light, the three shades of gray represent 50%, 90% and 95% credible regions, respectively. From the figure, it is revealed that the sample respondent's responses are normally distributed.

**Two-dimensional contour plot of the marginal posterior distribution of the mediating factor Fringe Benefit Services (FBS) with SQ and SNC**



The various diagnostic plots of the Bayesian estimation of convergence of MCMC algorithm confirms the fact that the convergence takes place and the normality is attained. Hence absolute fit of the Mobile QUAL regression model. From the Mobile QUAL regression model which is empirically tested with mediating factor with the dimensions Service Loyalty (SL) and Service Network Communication (SNC) it is evident that the Mobile service provider should concentrate on the Fringe Benefit Services (FBS) as the mandatory aspect of Mobile Service Provider in Tamil Nadu.

### **Managerial Implications for Mobile Service Provider**

Mobile-QUAL is a valid instrument to measure service quality in cellular mobile telephone operators in Tamil Nadu. Inclusion of additional dimensions and items make it more comprehensive for application in telecommunication services. The dimensions of Service Network Communication (SNC), Technology Adoption (TA), Customer Care Services (CCS), Service Quality (SQ) and Brand Switching Attitude & MNP (BSA) and the mediating parameter Fringe Benefit Services (FBS) and the outcome of Service Loyalty (SL) are important aspects that need managerial attention to attract and retain customers. The regulators in telecommunication industry should take appropriate measure to include these dimensions in undertaking objective assessment of quality of service of cellular mobile telephone operators in Tamil Nadu in safeguarding customers' interest.

The adapted Mobile-QUAL with additional dimensions was found to be a valid instrument to measure service quality in mobile phone services. The dimensions of tangible, assurance, responsiveness, empathy, convenience, and network quality found to have positive and statistically significant relationship with mobile phone users' perceived service quality. Convenience and network quality dimensions found to be relatively most important dimensions affecting users' perception. The dimension of reliability did not reflect significant effect on customers' perception of quality.

The competitive environment in mobile phone industry in Tamil Nadu has become intense. Mobile operators are vigorously investing in network coverage, upgradation, and quality, competitive pricing, and diversified offering to attract new customers and retain the existing customers. The results of this study substantiate the response strategy of mobile phone operators to enhance quality of network, the tangible, responsiveness, and assurance, empathy, and convenience dimensions of services that are vital to affect the customers' perception of quality of service.

The proactive role of Indian Telecom Sector, consumers' awareness to higher quality of services, and the prospects of new entrants in the market will enhance the existing level of competition. The emerging competitive market environment will offer challenges to mobile phone operators to proactively pursue customer focused strategy for building and sustaining competitive advantage based on benchmark quality of service dimensions that the results of this research indicate.

### **Findings**

- Earlier researches indicate that reliability positively and significantly affects customers' perception of service quality of mobile phone users.
- An aggressive strategy is needed to enhance the trustworthiness of mobile phone operators by keeping customers' best interest at heart, providing customized services and exemplary behaviour of contact personnel to make the interaction a memorable experience.
- The dimensions of tangible; responsiveness, assurance, and empathy affect customers' perception of service quality of mobile phone service provider.
- The study established that Mobile-QUAL with additional dimensions is a reliable instrument for measurement of service quality dimensions in telecommunication industry in Tamil Nadu.
- The competitive environment demand constant assessment of service quality to meet rapid changes in customers' demand. It is essential that service quality of mobile phone users be evaluated on regular basis to identify weaknesses, and emerging trends in the service.
- The regression model created in AMOS software shows that the fringe benefit service is the mediating factor for the loyal customers.

The results of the study reflect that the issue of provisioning of promised service, timely, accurately, and dependably will need highest priority. Earlier researches indicate that reliability positively and significantly affects customers' perception of service quality of mobile phone users. Because the reliability has been established as the driver of mobile phone service quality, Mobile operators will need to pursue two pronged strategy with internal focus on improved processes, and external focus on customers' needs. An aggressive strategy is needed to enhance the trustworthiness of mobile phone operators by keeping customers' best interest at heart, providing customized services and exemplary behaviour of contact personnel to make the interaction a memorable experience. The mobile operators should also focus on other dimensions of tangible; responsiveness, assurance, and empathy because these aspects significantly affect customers' perception of service quality of mobile phone service provider.

Employees play a leading role in telecommunication service. The role of frontline staff becomes extremely important in making the interaction with customer pleasing. The staffs need to know the importance of their role in service delivery. Management should ensure that human resources dimensions are addressed to optimize the service delivery by staff.

The study established that Mobile-QUAL with additional dimensions is a reliable instrument for measurement of service quality dimensions in telecommunication industry in Tamil Nadu. Changing customers have made the service quality a fluid phenomenon. The competitive environment demand constant assessment of service quality to meet rapid changes in customers' demand. It is essential that service quality of mobile phone users be evaluated on regular basis to identify weaknesses, and emerging trends in the service. The regular service quality assessment enables organizations to align to the changing customers needs (Dutka & Frankel, 1993).

Because of the growing level of competition that can be observed in Indian telecommunication industry, mobile phone operators should make efforts to continuously improve the level of service quality offered to their subscribers. However, a basic principle of quality management is that to improve quality, it must first be measured. On the basis of the need to develop specific measurement tools for different services, this study aimed at developing and validating a model specifically for measuring mobile telecommunication service quality. A multidimensional model has been proposed (Mobile-QUAL) based on an extensive literature review and then tested and validated by the survey data collected through Indian mobile phone subscribers in Tamil Nadu. This model provides a very useful tool, for both researchers and practitioners, for measuring and managing service quality in mobile telecommunication sector.

Finding of this study showed that mobile phone subscribers form their service quality perceptions based on their evaluations of seven primary dimensions including: network quality, value-added service, pricing plans, employees' competency, billing system, customer services and service convenience. According to developed Mobile – QUAL scale, mobile telecommunication service quality is a second-order factor underlying these seven dimensions. Each of the seven identified and verified dimensions had significant loading on second-order factor. For practitioners, the twenty one items across seven factors can serve as a useful diagnostic purpose. They can use the validated scale to measure and improve service quality.

The results of confirmatory factor analysis indicated that value- added services is the most important factor driving customers' perceived service quality (Mobile-QUAL), followed by pricing plans and service convenience. These findings indicate that enhancing quality of value- added services can provide mobile phone operators with competitive advantages over their competitors. Indian mobile phone operators have been struggling over the past several years to improve their network quality through massive equipment investments. However, the results of this study show that network quality is the least important factor in customers' perception of service quality. Thus, mobile service providers must concentrate their efforts on developing value-added services, diversifying pricing plans and increasing service convenience to improve service quality and achieve customer satisfaction.

They did not find any significant relationship between customers evaluation of value-added services and their overall perceived service quality neither their satisfaction. But in contrast, they concluded that network quality is the most effecting factor on customer satisfaction and loyalty. On the other hand, findings similar to the results of this study were reported by Kim et al. (2004) and Lim et al. (2006) that confirm a positive effect of value- added services on customer satisfaction.

Mobile technology has developed rapidly and provided a wealth of opportunities for mobile service providers. As a result, many mobile phone users enjoy access to value-added services in addition to basic voice communication. Value-added services could be separated into four main types including communicating services, system

based services, downloads and subscription services and internet access services (MoEA, 2007). Communicating services refer to services that subscribers use other than traditional voice calls to communicate through video, pictures or text such as SMS, MMS and video call. System based services refer to services provided through setup on the operators such as ring back tones and two phone ringing. Downloads and subscription services refer to services such as downloading ringtones, wallpaper and games or subscription to newsletter and weather forecasting information. Internet access services refer to mobile internet provided by operators through WAP, GPRS or 3G internet access. Through developing and improving quality of mentioned value-added services, a mobile phone operator will stand a much better chance of retention and acquisition of more subscribers.

Furthermore, findings of this study showed that customers' evaluation of pricing plans and service convenience has important role in forming their overall perceived service quality. These results are similar to the findings of Santouridis and Trivellas (2010) which found pricing plans as a significant determinant in customer satisfaction and also similar to the findings of Negi (2009) which confirmed the importance of service convenience in driving customers perceived service quality. Thus, mobile phone operators must try to offer various pricing plans that meet customers' need, provide easy procedures for changing plans and deliver required information about pricing plans to improve customers' evaluation of pricing plans. Also, they must give great attention to issues such as sufficient number of retailers or kiosks, sufficient methods and locations for bill payment and ease of subscribing and changing services. The multinational firm should consider Indian socio-economic culture before fixing the price and other formation activities in telecom sector.

### **Conceptual Model**

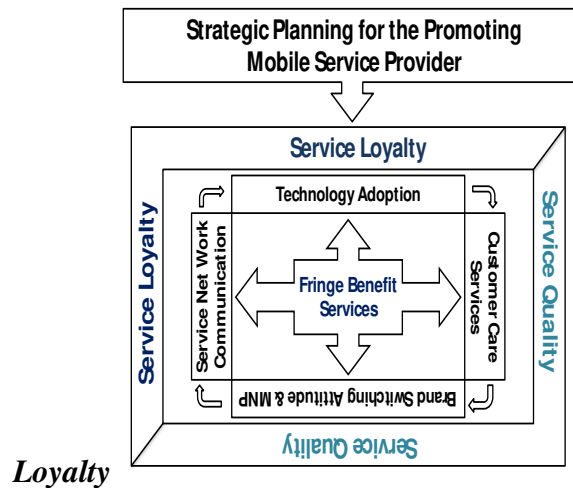
The conceptual research model has been empirically proved and the Fringe Benefit Services is the mediating factor for the Mobile Service Provider (Telecom) sector in the study area. Hence Mobile Service Provider (Telecom) Sector should concentrate on Fringe Benefit Services to improve the service loyalty for the growth of Mobile Service Provider (Telecom) Sector.

### **Strategic Planning For Improving Mobile Service Provider Loyalty**

In India, the Telecom Sector face a challenge of providing services to a broad range of customers, which varies from suave community and high net worth individuals to low-end publics who are catered to by stakeholders. Over time, a series of initiatives have been taken to improve the quality of customer service comprises the following in the figure:



**Fig 5.2 Strategic Planning for The Mobile Service Provider**



### Limitations and Directions for Further Research

This study being in a specific geographic area of Tamil Nadu, the results may be specific for this area. In order to generalize the proposed model, further researches should replicate this model in other populations and provinces. Second, the possibility to generalize the results to other countries with different characteristics (such as different cultural context, different level of economic development) needs to be verified, by re-testing the proposed model.

Further researchers could examine the relationship between Mobile- QUAL, customers' satisfaction and other relevant variables such as customer loyalty. Also, future research could focus on the antecedents of mobile telecommunication service quality and how customers form their perceptions about each of the constructs in Mobile- QUAL in Indian context.

### Conclusion

Quality is generally regarded as being a key factor in the creation of worth and in influencing customer satisfaction. Hence, the telecommunication industry in India has to be strategically positioned to provide quality services to satisfy customers. To provide improved quality service, telecommunication companies need to investigate degree of customers' sensitivity and expectations toward service quality. Armed with such information, telecommunication outfits are then able to strategically focus service quality objectives and procedures to fit the Indian market.

